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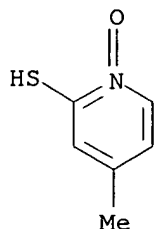
Today's Date: 11/17/2001

<u>DB Name</u>	<u>Query</u>	<u>Hit Count</u>	<u>Set Name</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	134 not 127	35	<u>L35</u> ✓
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	132 not 131	128	<u>L34</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	131 and corrosion	28	<u>L33</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	130 and corrosion	156	<u>L32</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	130 and (oxazolidine or methyloxazolidine or triazine\$10 near5 (triethanol or ethanol) or methylenebis or methylene bis )	83	<u>L31</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	129 and (isothiazol\$10 or benzisothiazol\$10 or benz?isothiazol\$10)	467	<u>L30</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	110 and (chelate\$10 or complex\$10 or sequest\$10) near20 (phosphate or polyphosphate or edta or ethylenediaminetetraacetic or ethylenediamine or ethylene diamine or nitriloacetic or glycine or gluconic or	803	<u>L29</u>

	polyoxycarboxylic or phosphonic or glutaric or succinic or polyaspartic or polyaspartic)		
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	110 and (chelate\$10 or complex\$10 or sequest\$10)	2070	<u>L28</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	(benzotriazole or methylbenzotriazole or triazole) and 126	180	<u>L27</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	110 and corrosion near (anti or inhibit\$5 or protect\$10)	412	<u>L26</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	110 and corrosion near50 (benzotriazole or methylbenzotriazole or triazole)	9	<u>L25</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	122 and 15	7	<u>L24</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	122 and 14	3	<u>L23</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	110 and (14 or 15 or 16)	521	<u>L22</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	773281	6	<u>L21</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	19534532	2	<u>L20</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	9852416	3	<u>L19</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	19722858	1	<u>L18</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	2274779	5	<u>L17</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	9833380	2	<u>L16</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	19705085	1	<u>L15</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	110 and (15 and 16)	3	<u>L14</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	110 and ((n-formal or (condensa\$10 near (aldehyde or formaldehyde or acetaldehyde or propionaldehyde) near (amine or alkanolamine or oxazolidine or ethanolamine or isopropanol amine or ethanol amine or isopropanolamine or aminopropanol or amino near propanol or methyloxazolidine or oxazolidine)) or 14) and 15 and 16)	2	<u>L13</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	110 and (14 and 15 and 16)	2	<u>L12</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	110 and (15 and 16 and 17)	3	<u>L11</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	19 and 18 and 17	3368	<u>L10</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	16 or stabilizer	219688	<u>L9</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	15 or antifung\$10 or fungicid\$10	72713	<u>L8</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	14 or antibact\$10 or bactericid\$10	84392	<u>L7</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	pyrion na or pyrionna or zinc pyrithione or pyrion disulfide or pyrion disulphide or sodium bromate or nabro3 or nabro".sub.3" or mercaptobenzothiazole or mercaptopyridine	9041	<u>L6</u>

USPT,PGPB,JPAB,EPAB,DWPI,TDBD	kathon 893 or kathon 893t or kathon 886 or zonenfex or znonen fex	63	<u>L5</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	l2 or l1	23	<u>L4</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	l2 and l1	2	<u>L3</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	grotan bk	9	<u>L2</u>
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	mar 71	16	<u>L1</u>

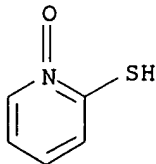
L35 ANSWER 1 OF 8 REGISTRY COPYRIGHT 2002 ACS  
RN 55154-52-4 REGISTRY  
CN 2-Pyridinethiol, 4-methyl-, 1-oxide, sodium salt (9CI) (CA INDEX NAME)  
OTHER NAMES:  
CN **4-Methyl-2-mercaptopyridine N-oxide sodium salt**  
MF C6 H7 N O S . Na  
LC STN Files: CA, CAPLUS, TOXCENTER  
CRN (34341-26-9)



● Na

2 REFERENCES IN FILE CA (1962 TO DATE)  
2 REFERENCES IN FILE CAPLUS (1962 TO DATE)

L35 ANSWER 2 OF 8 REGISTRY COPYRIGHT 2002 ACS  
RN 35218-64-5 REGISTRY  
CN 2-Pyridinethiol, 1-oxide, compd. with phenylhydrazine (1:1) (9CI) (CA INDEX NAME)  
OTHER CA INDEX NAMES:  
CN Hydrazine, phenyl-, compd. with 2-pyridinethiol 1-oxide (1:1) (9CI)  
OTHER NAMES:  
CN **Phenylhydrazine salt of 2-mercaptopyridine N-oxide**  
MF C6 H8 N2 . C5 H5 N O S  
LC STN Files: CA, CAPLUS, IFICDB, IFIPAT, IFIUDB, TOXCENTER, USPATFULL  
  
CM 1  
  
CRN 1121-31-9  
CMF C5 H5 N O S



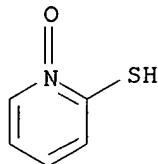
CM 2

CRN 100-63-0  
CMF C6 H8 N2

H<sub>2</sub>N-NH-Ph

2 REFERENCES IN FILE CA (1962 TO DATE)  
2 REFERENCES IN FILE CAPLUS (1962 TO DATE)

L35 ANSWER 3 OF 8 REGISTRY COPYRIGHT 2002 ACS  
RN 34154-10-4 REGISTRY  
CN 2-Pyridinethiol, 1-oxide, potassium salt (8CI, 9CI) (CA INDEX NAME)  
OTHER CA INDEX NAMES:  
CN Potassium, (2-pyridylthio)-, N-oxide (7CI)  
OTHER NAMES:  
CN **Potassium 2-mercaptopyridine N-oxide**  
DR 75164-72-6  
MF C5 H5 N O S . K  
CI COM  
LC STN Files: CA, CAOLD, CAPLUS, IFICDB, IFIPAT, IFIUDB, TOXCENTER,  
USPATFULL  
CRN (1121-31-9)

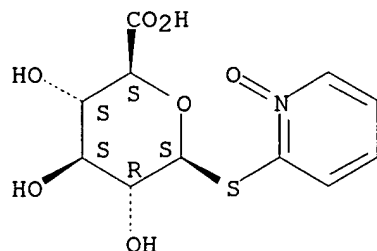


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10 REFERENCES IN FILE CA (1962 TO DATE)  
10 REFERENCES IN FILE CAPLUS (1962 TO DATE)  
1 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

L35 ANSWER 4 OF 8 REGISTRY COPYRIGHT 2002 ACS  
RN 33776-71-5 REGISTRY  
CN .beta.-D-Glucopyranosiduronic acid, 1-oxido-2-pyridinyl 1-thio- (9CI)  
(CA INDEX NAME)  
OTHER CA INDEX NAMES:  
CN .beta.-D-Glucopyranosiduronic acid, 2-pyridinyl 1-thio-, N-oxide  
CN Glucopyranosiduronic acid, 2-pyridyl-1-thio-, oxide, .beta.-D- (8CI)  
OTHER NAMES:  
CN **2-Mercaptopyridine-N-oxide S-glucuronide**  
CN 2-Pyridinethiol 1-oxide glucuronide  
FS STEREOSEARCH  
MF C11 H13 N O7 S

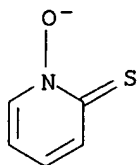
Absolute stereochemistry.



5 REFERENCES IN FILE CA (1962 TO DATE)  
5 REFERENCES IN FILE CAPLUS (1962 TO DATE)

CM 1

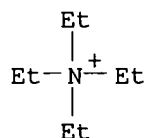
CRN 45529-38-2  
CMF C5 H4 N O S



CM 2

CRN 66-40-0

CMF C8 H20 N



8 REFERENCES IN FILE CA (1962 TO DATE)

8 REFERENCES IN FILE CAPLUS (1962 TO DATE)

L35 ANSWER 6 OF 8 REGISTRY COPYRIGHT 2002 ACS

RN 13463-41-7 REGISTRY

CN Zinc, bis[1-(hydroxy-.kappa.O)-2(1H)-pyridinethionato-.kappa.S2]-, (T-4)-(9CI) (CA INDEX NAME)

OTHER CA INDEX NAMES:

CN 2(1H)-Pyridinethione, 1-hydroxy-, zinc complex

CN Zinc, bis(1-hydroxy-2(1H)-pyridinethionato)- (6CI, 7CI, 8CI)

CN Zinc, bis(1-hydroxy-2(1H)-pyridinethionato-O,S)-, (T-4)-

OTHER NAMES:

CN 1-Hydroxy-2-pyridinethione, zinc salt

CN 2-Mercaptopyridine 1-oxide zinc salt

CN 2-Pyridinethiol 1-oxide zinc salt

CN 2-Pyridinethiol N-oxide zinc salt

CN BC-J

CN Biocut ZP

CN Bis(1-hydroxy-2(1H)-pyridinethionato)zinc

CN Bis(1-hydroxy-2-(1H)-pyridinethionato)zinc

CN Bis(2-pyridinethiol 1-oxide)zinc

CN Evafine P 50

CN Finecide ZPT

CN FSB 8332

CN Hokucide ZPT

CN Marukacide YP-DP

CN Niccanon SKT

CN Niccanon ZP

CN OM 1563

CN Omadine Zinc

CN Pyrithione zinc

CN Tomicide Z 50

CN Tomicide ZPT 50

CN Vancide P

CN Zinc 1-hydroxy-2-pyridinethione

CN **Zinc 2-mercaptopyridine N-oxide**

CN Zinc 2-pyridinethiol 1-oxide

CN Zinc Omadine

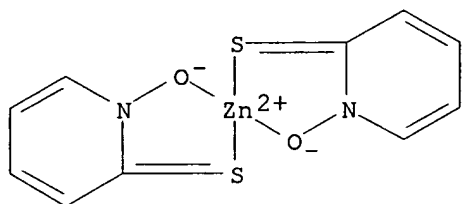
CN Zinc pyrethion

CN Zinc pyridine-2-thione-N-oxide

CN Zinc pyrithione



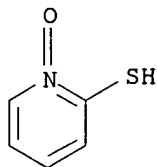
CN Zinc, bis(2-pyridinylthio)-, N,N'-dioxide  
 CN Zincpolyanemine  
 CN ZPT  
 AR 3865-77-8  
 DR 162400-43-3, 1192-70-7, 1320-68-9, 55172-61-7, 16782-00-6, 17652-47-0,  
 14376-32-0, 15686-64-3, 3138-01-0, 3590-23-6, 3865-77-8, 51148-10-8,  
 51406-57-6, 109702-19-4, 74261-71-5, 31089-48-2, 35430-20-7, 39412-61-8,  
 118480-78-7, 192458-89-2, 208398-70-3, 226883-65-4, 244778-79-8  
 MF C10 H8 N2 O2 S2 Zn  
 CI CCS, COM  
 LC STN Files: ADISINSIGHT, ADISNEWS, AGRICOLA, ANABSTR, AQUIRE,  
 BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CAOLD, CAPLUS, CBNB, CEN, CHEMCATS,  
 CHEMLIST, CIN, CSCHEM, CSNB, DDFU, DIOGENES, DRUGU, EMBASE, HSDB\*,  
 IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK\*, MSDS-OHS, NAPRALERT,  
 NIOSHTIC, PIRA, PROMT, RTECS\*, TOXCENTER, USAN, USPAT2, USPATFULL  
 (\*File contains numerically searchable property data)  
 Other Sources: DSL\*\*, EINECS\*\*, TSCA\*\*, WHO  
 (\*\*Enter CHEMLIST File for up-to-date regulatory information)



821 REFERENCES IN FILE CA (1962 TO DATE)  
 19 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
 822 REFERENCES IN FILE CAPLUS (1962 TO DATE)  
 31 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

L35 ANSWER 7 OF 8 REGISTRY COPYRIGHT 2002 ACS  
 RN 3811-73-2 REGISTRY  
 CN 2-Pyridinethiol, 1-oxide, sodium salt (8CI, 9CI) (CA INDEX NAME)  
 OTHER CA INDEX NAMES:  
 CN 2-Pyridinethiol, 1-oxide, sodium deriv. (6CI)  
 CN Sodium, (2-pyridylthio)-, N-oxide (7CI)  
 OTHER NAMES:  
 CN 1-Oxo-2-pyridinethiol sodium salt  
 CN 2-Mercaptopyridine 1-oxide sodium salt  
 CN **2-Mercaptopyridine N-oxide sodium salt**  
 CN 2-Mercaptopyridine oxide sodium salt  
 CN 2-Pyridinethiol N-oxide sodium salt  
 CN 2-Pyridylthiol-N-oxide sodium salt  
 CN San-aibac Sodium Omadine  
 CN Sodium 2-mercaptopyridine 1-oxide  
 CN **Sodium 2-mercaptopyridine N-oxide**  
 CN Sodium 2-pyridinethiol 1-oxide  
 CN Sodium 2-pyridinethiol N-oxide  
 CN Sodium 2-pyridinethiolate 1-oxide  
 CN Sodium 2-pyridinethiolate N-oxide  
 CN Sodium pyridine-1-oxide-2-thiolate

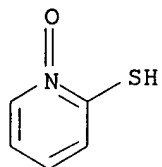
CN Sodium pyridine-2-thione-N-oxide  
 CN Sodium pyrithione  
 CN Sodium, (2-pyridinylthio)-, N-oxide  
 CN Thione (reagent)  
 CN Topcide 280  
 DR 75164-71-5, 5412-36-2  
 MF C5 H5 N O S . Na  
 CI COM  
 LC STN Files: AQUIRE, BEILSTEIN\*, BIOBUSINESS, BIOSIS, CA, CAOLD, CAPLUS,  
 CASREACT, CHEMCATS, CHEMINFORMRX, CHEMLIST, CSCHEM, CSNB, IFICDB,  
 IFIPAT, IFIUDB, IPA, MSDS-OHS, NIOSHTIC, PROMT, RTECS\*, SPECINFO,  
 TOXCENTER, USPAT2, USPATFULL  
 (\*File contains numerically searchable property data)  
 Other Sources: DSL\*\*, EINECS\*\*, TSCA\*\*  
 (\*\*Enter CHEMLIST File for up-to-date regulatory information)  
 CRN (1121-31-9)



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299 REFERENCES IN FILE CA (1962 TO DATE)  
 8 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
 300 REFERENCES IN FILE CAPLUS (1962 TO DATE)  
 11 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

L35 ANSWER 8 OF 8 REGISTRY COPYRIGHT 2002 ACS  
 RN 1121-31-9 REGISTRY  
 CN 2-Pyridinethiol, 1-oxide (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)  
 OTHER NAMES:  
 CN 2-Mercaptopyridine 1-oxide  
 CN 2-Mercaptopyridine monoxide  
 CN **2-Mercaptopyridine N-oxide**  
 CN 2-Pyridinethiol N-oxide  
 CN Omadine  
 FS 3D CONCORD  
 MF C5 H5 N O S  
 CI COM  
 LC STN Files: ANABSTR, BEILSTEIN\*, BIOBUSINESS, BIOSIS, BIOTECHNO, CA,  
 CAOLD, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMINFORMRX, CHEMLIST,  
 CIN, CSCHEM, EMBASE, HODOC\*, IFICDB, IFIPAT, IFIUDB, NIOSHTIC, PHAR,  
 PROMT, RTECS\*, TOXCENTER, USPAT2, USPATFULL  
 (\*File contains numerically searchable property data)  
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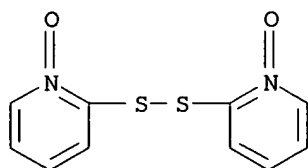
281 REFERENCES IN FILE CA (1962 TO DATE)

46 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA

281 REFERENCES IN FILE CAPLUS (1962 TO DATE)

22 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

L37 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2002 ACS  
 RN 3696-28-4 REGISTRY  
 CN Pyridine, 2,2'-dithiobis-, 1,1'-dioxide (9CI) (CA INDEX NAME)  
 OTHER CA INDEX NAMES:  
 CN Pyridine, 2,2'-dithiodi-, 1,1'-dioxide (6CI, 7CI, 8CI)  
 OTHER NAMES:  
 CN (1-Oxo-2-pyridyl) disulfide  
 CN 2,2'-Dipyridyl disulfide bis-N-oxide  
 CN 2,2'-Dipyridyl disulfide N,N'-bisoxide  
 CN 2,2'-Dithiobis(pyridine 1-oxide)  
 CN 2,2'-Dithiobis(pyridine N-oxide)  
 CN 2,2'-Dithiobispyridine 1,1'-dioxide  
 CN 2,2'-Dithiodipyridine 1,1'-dioxide  
 CN Bis(2-pyridine-N-oxide)disulfide  
 CN Bis(2-pyridyl 1-oxide) disulfide  
 CN Bis(2-pyridyl) disulfide di-N-oxide  
 CN Bis(2-pyridyl-N-oxide) disulfide  
 CN Bis(N-oxido-2-pyridyl) disulfide  
 CN Di-2-pyridyl disulfide N,N'-dioxide  
 CN Dipyrrithione  
 CN NSC 677437  
 CN Omadine disulfide  
 CN Omadine DS  
 CN OSY 20  
 FS 3D CONCORD  
 DR 90829-79-1  
 MF C10 H8 N2 O2 S2  
 CI COM  
 LC STN Files: BEILSTEIN\*, BIOBUSINESS, BIOSIS, CA, CAOLD, CAPLUS,  
 CASREACT,  
 CHEMCATS, CHEMINFORMRX, CHEMLIST, CSCHEM, DDFU, DRUGU, EMBASE, HODOC\*,  
 IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, RTECS\*, SPECINFO, TOXCENTER,  
 USAN,  
 USPATFULL  
 (\*File contains numerically searchable property data)  
 Other Sources: EINECS\*\*, NDSL\*\*, TSCA\*\*, WHO  
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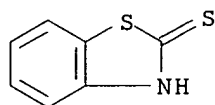
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 17 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
 241 REFERENCES IN FILE CAPLUS (1962 TO DATE)

24 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

L39 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2002 ACS  
RN 149-30-4 REGISTRY  
CN 2(3H)-Benzothiazolethione (9CI) (CA INDEX NAME)  
OTHER CA INDEX NAMES:  
CN 2-Benzothiazolethiol (8CI)  
CN 2-Benzothiazolinethione (6CI, 7CI)  
OTHER NAMES:  
CN 1,3-Benzothiazole-2-thiol  
CN 1,3-Benzothiazole-2-thione  
CN 2,3-Dihydrobenzothiazole-2-thione  
CN 2-Benzothiazolyl mercaptan  
CN 2-MBT  
CN 2-Mercaptobenzothiazole  
CN 2-Mercaptobenzthiazole  
CN 2-Sulfanylbzothiazole  
CN Accel M  
CN Accelerator M  
CN Aero Promoter 412  
CN Benz-1,3-thiazolidine-2-thione  
CN Captax  
CN Dermacid  
CN Ekagom G  
CN Kaptaks  
CN Kaptax  
CN MBT  
CN MBT (vulcanization accelerator)  
CN Mebetizol  
CN Mebetizole  
CN Mebithizol  
CN Mercaptobenzothiazole  
CN Mercaptobenzthiazole  
CN Mertax  
CN Nocceler M  
CN Nocceler M-P  
CN Nonflex NB  
CN Nuodeb 84  
CN Perkacit MBT  
CN Pneumax MBT  
CN Rotax  
CN Royal MBT  
CN Sanceler M  
CN Soxinol M  
CN Thiotax  
CN Vulkacit M  
CN Vulkacit Mercapto  
CN Vulkacit Mercapto/C  
CN Vulkacit Mercapto/MG  
CN Vulkafil ZN 94TT01  
CN Wobezit M  
AR 27157-85-3  
FS 3D CONCORD  
DR 12640-90-3, 55199-93-4, 119170-41-1, 112242-83-8, 81605-65-4, 4464-58-8  
MF C7 H5 N S2  
CI COM

LC STN Files: AGRICOLA, ANABSTR, AQUIRE, BEILSTEIN\*, BIOBUSINESS, BIOSIS,  
BIOTECHNO, CA, CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS,  
CHEMINFORMRX, CHEMLIST, CIN, CSCHEM, CSNB, DDFU, DETHERM\*, DIOGENES,  
DIPPR\*, DRUGU, EMBASE, ENCOMPLIT, ENCOMPLIT2, ENCOMPPAT, ENCOMPPAT2,  
GMELIN\*, HODOC\*, HSDB\*, IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK\*,  
MSDS-OHS, NIOSHTIC, PDLCOM\*, PIRA, PROMT, RTECS\*, SPECINFO, SYNTHLINE,  
TOXCENTER, ULIDAT, USPAT2, USPATFULL  
(\*File contains numerically searchable property data)  
Other Sources: DSL\*\*, EINECS\*\*, TSCA\*\*  
(\*\*Enter CHEMLIST File for up-to-date regulatory information)



\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

4834 REFERENCES IN FILE CA (1962 TO DATE)  
202 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
4840 REFERENCES IN FILE CAPLUS (1962 TO DATE)  
8 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

L42 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2002 ACS

RN 21564-17-0 REGISTRY

CN Thiocyanic acid, (2-benzothiazolylthio)methyl ester (8CI, 9CI) (CA INDEX NAME)

OTHER NAMES:

CN 2-(Thiocyanatomethylthio)benzo[d]thiazole

CN 2-(Thiocyanomethylthio)benzothiazole

CN 2-[(Thiocyanatomethyl)thio]benzothiazole

CN Afrotin CRO

CN Alentisan

CN Ascend

CN Benthiazole

CN BN 30

CN Bulab 6009

CN Busan 1030

CN Busan 1118

CN Busan 15

CN Busan 30

CN Busan 30-1

CN Busan 30A

CN Busan 30I

CN Busan 30L

CN Busan 30WB

CN Busan 30WBA

CN Busan 70

CN Busan 71

CN Busan 72

CN Busan 72A

CN Busan 80

CN Delsan 30

CN Guzafan

CN Ichiban

CN KVK 733059

CN Nu-flow T

CN Nusan

CN Sancelant TMB

CN Superdavloxan

CN TCMTB

FS 3D CONCORD

DR 6441-45-8, 56532-60-6, 56996-45-3, 120946-97-6, 64441-44-7, 64441-45-8

MF C9 H6 N2 S3

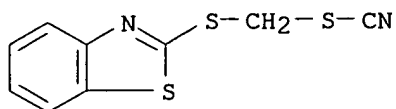
CI COM

LC STN Files: AGRICOLA, ANABSTR, AQUIRE, BEILSTEIN\*, BIOBUSINESS, BIOSIS, CA, CABA, CAOLD, CAPLUS, CASREACT, CBNB, CHEMCATS, CHEMLIST, CIN, CSCHEM, CSNB, HSDB\*, IFICDB, IFIPAT, IFIUDB, MEDLINE, MSDS-OHS, NIOSHTIC, PIRA, PROMT, RTECS\*, SPECINFO, TOXCENTER, USPAT2, USPATFULL (\*File contains numerically searchable property data)

Other Sources: DSL\*\*, EINECS\*\*

(\*\*Enter CHEMLIST File for up-to-date regulatory information)





\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

390 REFERENCES IN FILE CA (1962 TO DATE)  
 16 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
 390 REFERENCES IN FILE CAPLUS (1962 TO DATE)

=> s nabro3

L43 1 NABRO3

=> d

L43 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2002 ACS

RN 7789-38-0 REGISTRY

CN Bromic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)

OTHER NAMES:

CN Neutralizer K 126

CN Neutralizer K 140

CN Neutralizer K 938

CN Sodium bromate

CN **Sodium bromate (NaBrO3)**

DR 38869-75-9, 38869-76-0

MF Br H O3 . Na

CI COM

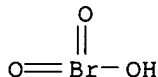
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(\*File contains numerically searchable property data)

Other Sources: DSL\*\*, EINECS\*\*, TSCA\*\*

(\*\*Enter CHEMLIST File for up-to-date regulatory information)

CRN (7789-31-3)



● Na

1065 REFERENCES IN FILE CA (1962 TO DATE)  
 8 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
 1067 REFERENCES IN FILE CAPLUS (1962 TO DATE)  
 21 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

L13 ANSWER 6 OF 8 CAPLUS COPYRIGHT 2001 ACS  
 ACCESSION NUMBER: 1994:501979 CAPLUS  
 DOCUMENT NUMBER: 121:101979  
 TITLE: **Water**-containing microbicidal compositions  
 for industrial goods  
 INVENTOR(S): Kameda, Koji; Kusaka, Daiki  
 PATENT ASSIGNEE(S): Takeda Chemical Industries Ltd, Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 INT. PATENT CLASSIF.:  
 MAIN: A01N047-12  
 SECONDARY: A01N025-02; A01N031-02; A01N043-04  
 CLASSIFICATION: 5-2 (Agrochemical Bioregulators)  
 Section cross-reference(s): 40, 42, 58  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 06145014	A2	19940524	JP 1992-327281	19921111

OTHER SOURCE(S): MARPAT 121:101979

ABSTRACT:

A **water**-contg. microbial compn. (for industrial goods such as paint, adhesive) contains a **carbamate**, an **epoxy** compd., and HO(CnH2nO)mR1 (R1 = C1-4 alkyl; m = 1-4; n = 2-4). For example, a microbicide consisted of 3-iodo-2-propynyl butylcarbamate 5, methylcarbitol 69.8, \*\*\*water\*\*\* 25, and neopentyl **glycol** diglycidyl ether 0.2 part by wt. The industrial goods includes coating materials, building materials, and textiles.

SUPPL. TERM: **carbamate** compd microbicide industrial goods  
 INDEX TERM: Building materials  
 Coating materials  
 Textiles

INDEX TERM: (**carbamate** microbicidal agents in)  
 Bactericides, Disinfectants, and Antiseptics  
 (carbamates, for industrial goods)

INDEX TERM: Epoxides  
 ROLE: BIOL (Biological study)

INDEX TERM: (microbicidal compn. contg., for industrial goods)  
 463-77-4D, Carbamic acid, derivs. 17557-23-2, Neopentyl  
**glycol** diglycidyl ether 156758-73-5,  
 3-Iodo-2-propynyl butylcarbamate-methyl carbitol-neopentyl  
**glycol** diglycidyl ether mixt. 156758-74-6,  
 3-Iodo-2-propynyl

butylcarbamate-methylcarbitol-2-ethylhexyl  
 glycidyl ether mixt.

ROLE: BIOL (Biological study)  
 (microbicidal compn. contg., for industrial goods)

L1 ANSWER 1 OF 1 CAPLUS COPYRIGHT 2001 ACS

ACCESSION NUMBER: 1996:179223 CAPLUS

DOCUMENT NUMBER: 124:236544

TITLE: **Preservation of water-based cooling lubricating oils** [against microbial degradation]

AUTHOR(S): Anker, W.

CORPORATE SOURCE: BODE Chem. G.m.b.H. und Co., Hamburg, 22525, Germany

SOURCE: Mikrob. Materialzerstoerung Materialschutz (1995), 151-61. Editor(s): Brill, Holger. Fischer: Jena, Germany.

CODEN: 62OVAJ

DOCUMENT TYPE: Conference; General Review

LANGUAGE: German

CLASSIFICATION: 51-0 (Fossil Fuels, Derivatives, and Related Products)

Section cross-reference(s): 10

ABSTRACT:

A review, with 13 refs., of biocides and biostats for water-based [esp. metalworking] cooling lubricating oils. Classes of biocides discussed include:

(1) aldehydes (formaldehyde and glutaraldehyde) and aldehyde precursors (O-formals and hemiformals; N-formals, amins, and hemiaminals; and 1,3-propanediol-type compds.), isothiazolinones, and other compds.

SUPPL. TERM: review metalworking emulsion lubricant biocide; aldehyde metalworking lubricating oil biocide review

INDEX TERM: Aldehydes, uses

Amins

ROLE: BAC (Biological activity or effector, except adverse);

MOA (Modifier or additive use); BIOL (Biological study); USES (Uses)

(classes and action mechanisms of biocides and biostats for water-based metalworking cooling lubricating oils)

INDEX TERM: Amines

ROLE: BAC (Biological activity or effector, except adverse);

MOA (Modifier or additive use); BIOL (Biological study); USES (Uses)

(hemi-; classes and action mechanisms of biocides and biostats for water-based metalworking cooling

lubricating

oils)

INDEX TERM: Lubricating oil additives

(biocides, classes and action mechanisms of biocides and biostats for water-based metalworking cooling

lubricating

oils)

INDEX TERM: Acetals

ROLE: BAC (Biological activity or effector, except adverse);

MOA (Modifier or additive use); BIOL (Biological study); USES (Uses)

(formals, classes and action mechanisms of biocides and biostats for water-based metalworking cooling

lubricating

INDEX TERM: oils)  
 Acetals  
 ROLE: BAC (Biological activity or effector, except  
 adverse);  
 MOA (Modifier or additive use); BIOL (Biological study);  
 USES (Uses)  
 (formals, hemi-, classes and action mechanisms of  
 biocides and biostats for water-based metalworking  
 cooling lubricating oils)  
 INDEX TERM: Lubricating oil additives  
 (metalworking, water-based, biocides and biostats;  
 classes and action mechanisms of biocides and biostats  
 for water-based metalworking cooling lubricating oils)  
 INDEX TERM: 50-00-0, Formaldehyde, uses 111-30-8, Glutaraldehyde  
 adverse);  
 ROLE: BAC (Biological activity or effector, except  
 FMU (Formation, unclassified); MOA (Modifier or additive  
 use); BIOL (Biological study); FORM (Formation,  
 nonpreparative); USES (Uses)  
 (biocide; classes and action mechanisms of biocides and  
 biostats for water-based metalworking cooling  
 lubricating  
 oils)  
 INDEX TERM: 52-51-7, 2-Bromo-2-nitro-1,3-propanediol 126-11-4,  
 Tris(hydroxymethyl)nitromethane 140-95-4, Dimethylolurea  
 2634-33-5, 1,2-Benzisothiazol-3(2H)-one 2682-20-4  
 2832-19-1, N-Methylolchloracetamide 3586-55-8  
 3811-73-2,  
 Sodium 2-pyridinethiol-N-oxide 4719-04-4 5625-90-1,  
 Methylenebis(morpholine) 7779-27-3, 1,3,5-Triethyl-1,3,5-  
 hexahydrotriazine 14548-60-8 26172-55-4 26530-20-1  
 51200-87-4, 4,4-Dimethyloxazolidine 55406-53-6,  
 3-Iodo-2-propynylbutyl carbamate 66204-44-2 82633-78-1  
 adverse);  
 ROLE: BAC (Biological activity or effector, except  
 MOA (Modifier or additive use); BIOL (Biological study);  
 USES (Uses)  
 (biocide; classes and action mechanisms of biocides and  
 biostats for water-based metalworking cooling  
 lubricating  
 oils)  
 INDEX TERM: 10043-35-3D, Boric acid (H3BO3), alkanolamine esters  
 adverse);  
 ROLE: BAC (Biological activity or effector, except  
 MOA (Modifier or additive use); BIOL (Biological study);  
 USES (Uses)  
 (biocides; classes and action mechanisms of biocides and  
 biostats for water-based metalworking cooling  
 lubricating  
 oils)

=>

PATENT APPLICATION

ACCESSION NUMBER: 368593 EUROPATFULL EW 199020 FS OS STA B  
 TITLE: Controlling fungal or bacterial growth in synthetic metalworking fluids.  
 INVENTOR(S): Hollis, Cecil George, 1767 Poplar Estates Parkway, Germantown Tennessee 38138, US;  
 Sorrelle, Paul H., 6151 Grayling Drive, Jacksonville Florida 32256, US  
 PATENT ASSIGNEE(S): BUCKMAN LABORATORIES INTERNATIONAL, INC., 1256 North McLean Boulevard P.O. Box 8305, Memphis Tennessee 38108-0305, US  
 PATENT ASSIGNEE NO: 1031200  
 AGENT: Watkins, Arnold Jack et al, European Patent Attorney Frank B. Dehn & Co. Imperial House 15-19 Kingsway, London WC2B 6UZ, GB  
 AGENT NUMBER: 37381  
 OTHER SOURCE: ESP1990023 EP 0368593 A1 900516  
 SOURCE: Wila-EPZ-1990-H20-T1  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Anmeldung in Englisch; Veroeffentlichung in Englisch  
 DESIGNATED STATES: R AT; R BE; R CH; R DE; R ES; R FR; R GB; R GR; R IT; R LI; R LU; R NL; R SE  
 PATENT INFO.PUB.TYPE: EPA1 EUROPAEISCHE PATENTANMELDUNG  
 PATENT INFORMATION:

PATENT NO	KIND	DATE
EP 368593	A1	19900516
		19900516
EP 1989-311475		19891106
US 1988-267337		19881104

'OFFENLEGUNGS' DATE: 19900516  
 APPLICATION INFO.: EP 1989-311475 19891106  
 PRIORITY APPLN. INFO.: US 1988-267337 19881104  
 INT. PATENT CLASSIF.:  
 MAIN: C10M161-00  
 SECONDARY: C10M173-00  
 INDEX: C10M161-00 C10M135:36 C10M149:12  
 C10M149:14.  
 C10M173-0 0 C10M135:36  
 C10M149:12  
 C10M149:14.  
 C10N030-16

FIELD AVAILABILITY: AG  
 ABEN; DETDEN; CLMEN  
 PAGE COUNT: 20  
 NUMBER OF CLAIMS: 10; 7

ABSTRACT (ENGLISH):

A method of controlling fungal or bacterial growth in a synthetic metalworkig fluid comprising the addition to said fluid of  
 (a1) 5-chloro-2-methyl-4-isothiazolin-3-one  
 and  
 (a2) 2-methyl-4-isothiazolin-3-one  
 and  
 (b) an ionene polymer  
 wherein the ratio by weight of the sum of components (a1) and (a2) to component (b) is form 1:99 to 99:1 and wherein the amounts of the components are synergistically effective to control fungal or bacterial growth in said fluid.

Compositions containing these three components are also disclosed.

DESCRIPTION (ENGLISH):

The invention is directed to synergistic antimicrobial combinations of 5-chloro-2-methyl-4-isothiazolin-3-one and 2-methyl-4-isothiazolin-3-one with ionene polymers and their use in controlling fungal and/or bacterial growth in synthetic metalworking fluids.

Ionene polymers, i.e., cationic polymers containing quaternary nitrogens in the polymer backbone, are known to be useful in controlling bacteria and algae in various aqueous systems. U.S. Patents Nos. 3,874,870, 3,931,319, 4,027,020, 4,089,977, 4,506,081, and 4,581,058 give various examples of these polymers.

One such polymer is poly[oxyethylene-(dimethyliminio)ethylene(dimethyliminio)ethylene dichloride]. This polymer is manufactured and sold by Buckman Laboratories under the names **Busan 77** and **WSCP** as a biocide used primarily in aqueous systems, including aqueous use-dilutions of metalworking fluids for bacterial control.

This polymer has been reported as useful, in combination with **hexahydro-1,3,5-tris(2-hydroxyethyl)-S-triazine** and sodium **pyrithione**, for facilitating the control of microorganisms, including fungi and bacteria, in a synthetic metalworking fluid. (Zabik et al., "Unique Use of a Cationic Microbicide for Extending the Life of a Synthetic Metalworking Fluid in a Manufacturing Environment," Journal of the Society of Tribologists and Lubrication Engineers, 677-679 (August 1988), based on a presentation at the 42nd Annual Meeting in Anaheim, California, May 11-14, 1987). This ionene polymer has also been sold for use in metalworking fluids.

Another such polymer is the ionene polymer produced by the condensation of equimolar amounts of dimethylamine and epichlorohydrin, as disclosed in U.S. Patent No. 4,111,679.

5-Chloro-2-methyl-4-isothiazolin-3-one and 2-methyl-4-isothiazolin-3-one are commercially available biocidal compounds manufactured and sold in combination by Rohm and Haas under the name **Kathon 886**. The **Kathon 886** biocide is a 15% active mixture which contains 75% of the 5-chloro-compound and 25% of the 2-methyl-compound. This combination has been sold for use in a synthetic metalworking fluid.

Both of these types of products are used to control microorganisms in industrial settings. Many industries experience problems caused by microorganisms. These problems are especially present where aqueous systems are used.

The machining industry is such an industry in which problems causing microorganisms are encountered. In machining operations, metalworking fluids are used primarily to reduce friction and heat and thus reduce wear and prolong the life of equipment.

Unfortunately, metalworking fluids have many properties which make them an ideal medium for the growth of bacteria and fungi. These microorganisms can cause such problems as: the buildup of slime/microbial deposits on machine surfaces, the clogging of jets and lines, the deterioration of the metalworking fluid properties itself, enhanced corrosion, and health and odor problems. Although bacteria are important in the biodegradation of cutting fluids, fungi and yeast play an important role as well, especially in synthetic fluids (Bennet E.O., "The Deterioration of Metalworking Fluids", Prog. Industrial Microbiology, 13, p. 121 (1974)).

As these microorganisms grow in the metalworking fluid, the fluid begins to deteriorate and lose many of its essential properties. Its pH can drop

and other chemical changes can occur until the fluid no longer is able to provide adequate lubrication. At this point, the fluid must be replaced with fresh fluid. This is costly and results in loss of production time.

The previously mentioned problems have resulted in the extensive use of biocides in metalworking fluid systems. Biocides may be incorporated in fluid concentrate or added to diluted fluids once they are in the holding tanks of the machine works.

There are many commercially available biocides used today. Each of these biocides is generally useful, but each is attended by a variety of impediments. Some biocides have odor problems, or create hazards with respect to storage, use or handling, which limit their utility. Presently, no one type of compound has achieved an established predominance in the areas mentioned.

Economic factors should be considered before choosing a particular biocide for use in metalworking fluid systems. Such economic considerations apply to both the cost of the biocide and the expense of its application. The cost performance index of any biocide is derived from the basic cost of the material, its effectiveness per unit weight, the duration of its biocidal or biostatic effect in the system treated, and the ease and frequency of its addition to the system treated.

At present, none of the commercially available biocides is capable of exhibiting a prolonged biocidal effect. Instead, physical conditions, such as temperature and chemical reactivity with ingredients present in the system, often diminish or eliminate the effectiveness of the biocides. For example, many systems contain organic material which may react with a specific biocide or render it ineffective.

Several patents have been granted previously showing that **Kathon 886** biocide behaves synergistically with other chemicals or classes of chemicals. U.S. Patent No. 3,929,561 discloses that **Kathon 886** biocide can be blended with certain sulfones to produce a synergistic biocidal composition.

Furthermore, U.S. Patent No. 4,379,137 discloses the synergistic combination of certain ionene polymers, including **Busan 77** polymer, with **Kathon 886** biocide. These combinations are therein disclosed as useful in controlling bacteria in aqueous systems, and a test is reported concerning the efficacy of **Kathon 886** biocide and an ionene polymer utilized in the wash water in air handling systems. However, one cannot predict that, because two biocides are synergistic in water, the two biocides will also be synergistic in a complex fluid such as a synthetic metalworking fluid. In particular, a synthetic metalworking fluid contains organic and inorganic materials that could interfere with the activity of one or both of the biocides.

**Kathon 886** biocide is usually used at low concentrations, e.g., a few parts per million, to treat industrial aqueous systems. However, this dosage is not adequate to preserve systems in which heavy microbial growth occurs. Consequently, the dosage must be increased to significantly higher dosages to inhibit microbial growth. The high cost of **Kathon 886** biocide makes its use at high dosages prohibitive. Also, **Kathon 886** biocide, at the higher concentrations, may be also likely to cause irritation to those workers present during application.

Metalworking fluid systems in which heavy microbial growth occurs would benefit most from the practice of the present invention, described below. The practice of the present invention would nonetheless benefit many systems, whether or not heavy microbial growth occurs, because it provides for a more economical use of **Kathon 886** biocide, an expensive

biocide.

The present invention controls fungal or bacterial growth in a synthetic metalworking fluid. The invention encompasses a method of controlling fungal or bacterial growth in a synthetic metalworking fluid comprising the addition to said fluid of

(a1) 5-chloro-2-methyl-4-isothiazolin-3-one

and

(a2) 2-methyl-4-isothiazolin-3-one

and

(b) an ionene polymer

wherein the ratio by weight of the sum of components (a1) and (a2) to component (b) is from 1:99 to 99:1 and wherein the amounts of the components are synergistically effective to control fungal or bacterial growth in said fluid.

Components (a1), (a2) and (b) can be added to the metalworking fluid together or separately, in any order. Conveniently components (a1) and (a2) may be added in the form of a mixture one with another.

Further aspects of the invention provide a composition comprising:

(a) a mixture of 5-chloro-2-methyl-4-isothiazolin-3-one and 2-methyl-4-isothiazolin-3-one; and

(b) an ionene polymer;

wherein the ratio of component (a) to component (b) is from about 1:99 to about 99:1; and wherein the composition is formulated to control fungal or bacterial growth synergistically in a synthetic metalworking fluid;

and also methods of controlling fungal or bacterial growth in a synthetic metalworking fluid by the addition of said composition.

The invention can be obtained by addition of the components defined above to a concentrated synthetic metalworking fluid. In such case the invention encompasses a concentrated synthetic metalworking fluid containing components (a) and (b) as defined above, wherein the ratio of component (a) to component (b) is from about 1:99 to about 99:1; and wherein the amounts of the components (a) and (b) are synergistically effective to control fungal or bacterial growth when said fluid is diluted and used at a metalworking site.

The method can also be practiced by separate addition of the components (a) and (b) to the diluted synthetic metalworking fluid at the metalworking site. Such separate administration of components (a) and (b) can be done simultaneously or sequentially.

The ionene polymer may be chosen from a wide variety of known polymers based on compatibility of the ionene polymer with the metalworking fluid in use. Poly[oxyethylene(dimethylimino)-ethylene(dimethyliminio)ethylene dichloride] is known to be compatible with synthetic metalworking fluids. Another ionene polymer known to be compatible is the condensation product of dimethylamine and epichlorohydrin.

The ratio of component (a) to component (b) may range from 1:99 to about 99:1, preferably 20:80 to 80:20, more preferably 40:60 to 60:40, and most preferably 50:50.

The benefits of the invention are most evident in systems that are highly contaminated with microorganisms. These are systems with bacterial and fungal counts greater than  $1.0 \times 10^6$ /mL which are incapable of experiencing substantial count reduction when treated separately with low dosages of either Busan 77 polymer or Kathon 886 biocide. In these systems a low dosage of Kathon 886 biocide or Busan 77 polymer fails to provide adequate preservation.



One of the unique features of this invention is that when the 4-**isothiazolin-3-one** compounds are used in conjunction with an ionene polymer, it is possible in many instances, to reduce the total fungal or bacterial count to zero cells per mL and maintain it at this level. When either of the biocides is used alone (at the same concentration as when used in conjunction), it fails to achieve and maintain a zero level of microbial growth.

The synergistic activity of the combinations described above has been confirmed using standard laboratory techniques as illustrated in the examples below.

Synergism was determined by the method of Kull, F.C., Euman, P.C., Sylwestrowicz, H.D., and Mayer, R.L., Applied Microbiology 9:538-541 (1961) using the ratio:

$$\frac{(QA)}{(QA) + (QB)} \div \frac{(Qa)}{(Qa) + (Qb)}$$
 wherein Qa = Concentration of Compound A, in parts per million, acting alone, which produced an endpoint.

Qb = Concentration of Compound B, in parts per million, acting alone, which produced an endpoint.

QA = Concentration of Compound A, in parts per million, in the mixture, which produced an endpoint.

QB = Concentration of Compound B, in parts per million, in the mixture, which produced an endpoint.

When the sum of  $QA/Qa + QB/Qb$  is greater than 1, antagonism is indicated, and when the sum is equal to 1, additivity is indicated. When less than one, synergism is demonstrated.

To disclose the nature of the present invention still more clearly, the following illustrative example is given. It is to be understood, however, that the invention is not limited to the specific conditions or details set forth in this example except insofar as such limitations are specified in the appended claims.

#### Example

Synergistic Combination of **Kathon 886** biocide and **Busan 77** polymer is Synthetic Metalworking Fluids.

The combination of **Kathon 886** biocide and **Busan 77** polymer was tested for bacterial and fungal control in a synthetic metalworking fluid. The results were analyzed for synergism using the method described above. The test method employed was the Standard Method for the Evaluation of Antimicrobial Agents in Aqueous Metalworking Fluids (ASTM Designation: E686-80).

The ASTM test is a multiple challenge test designed to simulate industrial conditions. The biocides are each added to 450 mL aliquots of a synthetic metalworking fluid dilution. Controls contained only one of the biocides or no biocide.

The metalworking fluid samples are then inoculated with 50 mL of a mixed, partially defined microbial culture and aerated on a specific time cycle. The cycle is composed of 5 days of aeration followed by two days without, which simulates an industrial work schedule. Every week, for a minimum of 6 weeks or until the test fails, the metalworking fluid samples are measured for microbial growth. This is done by enumerating the bacteria and fungi using standard plate-counting techniques. Aliquots were streaked and incubated on Saboraud dextrose agar to determine fungal survival.

The microorganisms used in the metalworking fluid inoculum included:

- 1) "Wild" fungi and bacteria obtained from a spoiled industrial fluid.
- 2) *Staphylococcus aureus*
- 3) *Pseudomonas aeruginosa*

- 4) *Klebsiella pneumoniae*
- 5) *Escherichia coli*

A microbial count of less than  $1.0 \times 10^4$  colony forming units (cfu) per mL was indicative of very good preservation. This was also used as an endpoint for the synergism calculation. <table>

From Table 1 it can be concluded that **Kathon 886** biocide and **Busan 77** polymer when used in conjunction provide better microbial preservation of a synthetic metalworking fluid than when used individually. A combination of 10.0 ppm **Kathon 886** biocide and 10.0 ppm **Busan 77** polymer provides preservation that higher concentrations of either **Kathon 886** or **Busan 77** polymer biocide alone fail to provide.

For example, it requires 100.0 ppm of **Kathon 886** biocide to reduce the fungal count to that found when 10.0 ppm of both **Busan 77** polymer and **Kathon 886** biocide were used. **Busan 77** polymer did not control fungi at 20.0 ppm, and it is known that it will not control fungi at any level up to 2000 ppm. Furthermore, it is possible to reduce the bacterial and fungal counts to zero and maintain that level by using **Kathon 886** biocide and **Busan 77** polymer in combination.

The calculations for evaluating synergism are shown in Table 2.  
<table>

It can be concluded from Table 2 and its corresponding calculations that **Kathon 886** biocide and **Busan 77** polymer do behave synergistically to inhibit fungal and bacterial growth in synthetic metalworking fluids. Using the method of Kull et al., antimicrobial synergism has been demonstrated against both fungi and bacteria. In all of the calculations compound A, a is **Kathon 886** biocide and compound B, b is **Busan 77** polymer. For bacteria, the sum of the quotients  $QA/Qa$  and  $QB/Qb$  equals .7, which is less than 1 so synergism exists. Against fungi a lower value at .6 was shown; therefore, **Kathon 886** biocide and **Busan 77** polymer appear to exhibit better synergism against fungi than bacteria.

In interpreting Table 2, it should also be noted that **Busan 77** polymer by itself does not offer much antimicrobial activity in metalworking fluids unless the concentration is significantly higher than the highest concentration tested. Therefore, in the synergism calculations a value of 20 ppm was used, even though a much higher value could have been used. Furthermore, increasing the level of **Busan 77** polymer would not negatively affect the calculations - in fact it would only demonstrate greater synergism based on the method of Kull et al.

The synergistic antifungal and antibacterial combination described previously has synergistic activity when employed at appropriate concentrations and may be used to inhibit the growth of fungi and bacteria in metalworking fluids. It is obvious to those skilled in the art that the required synergistically effective amount (concentration) will vary with particular organisms and particular applications and can readily be determined by routine experimentation. Use of a synergistically effective amount enables the use of substantially smaller amounts of each component (a) and (b) than would be necessary for each component if used alone and than would be necessary if a mere additive effect from combining (a) and (b) were obtained.

In general, however, effective fungicidal and bactericidal response will be obtained when the synergistic combination is employed in concentrations ranging from about 0.1 to about 5,000 ppm 5-chloro-2-methyl-4-

isothiazolin-3-one and 2-methyl-4-isothiazolin-3-one, preferably 0.1 to 100 ppm, and from about 0.1 to about 10,000 ppm of ionene polymer, preferably 0.1 to 500 ppm.

CLAIMS (ENGLISH):

1. 1. A method of controlling fungal or bacterial growth in a synthetic metalworking fluid comprising the addition to said fluid of  
(a1) 5-chloro-2-methyl-4-isothiazolin-3-one  
and  
(a2) 2-methyl-4-isothiazolin-3-one  
and  
(b) an ionene polymer  
wherein the ratio by weight of the sum of components (a1) and (a2) to component (b) is from 1:99 to 99:1 and wherein the amounts of the components are synergistically effective to control fungal or bacterial growth in said fluid.

2. 2. A method as claimed in claim 1, wherein said ratio is from about 20:80 to about 80:20.

3. 3. A method as claimed in claim 2, wherein said ratio is from about 40:60 to about 60:40.

4. 4. A method as claimed in claim 3, wherein said ratio is about 50:50.

5. 5. A method as claimed in any preceding claim, wherein said ionene polymer is poly[oxyethylene(dimethyliminio)-.shy.ethylene(dimethyliminio)ethylene dichloride].

6. 6. A method as claimed in any one of claims 1 to 4, wherein said ionene polymer is the condensation product of about equimolar amounts of epichlorohydrin and dimethylamine.

7. 7. A method as claimed in any preceding claim wherein components (a1) and (a2) are added to said metalworking fluid in the form of a mixture one with another.

8. 8. A composition comprising:  
(a) a mixture of 5-chloro-2-methyl-4-isothiazolin-.shy. 3-one and 2-methyl-4-isothiazolin-3-one; and  
(b) an ionene polymer;  
wherein the ratio of component (a) to component (b) is from about 1:99 to about 99:1; and wherein the composition is formulated to control fungal or bacterial growth synergistically in a synthetic metalworking fluid.

9. 9. A method of controlling fungal or bacterial growth in a synthetic metalworking fluid comprising the step of adding to said metalworking fluid the composition of claim 8 in an amount synergistically effective to control said fungal or bacterial growth.

10. 10. A concentrated synthetic metalworking fluid containing  
(a) a mixture of 5-chloro-2-methyl-4-isothiazolin-.shy. 3-one and 2-methyl-4-isothiazolin-3-one; and  
(b) an ionene polymer;  
wherein the ratio of component (a) to component (b) is from about 1:99 to about 99:1; and wherein the amounts of components (a) and (b) are synergistically effective to control fungal or bacterial growth then said fluid is diluted and used at a metalworking site.

CLAIMS FOR THE FOLLOWING CONTRACTING STATES:

CLAIMS (ENGLISH):

1. 1. A method of controlling fungal or bacterial growth in a synthetic metalworking fluid comprising the addition to said fluid of

(a1) 5-chloro-2-methyl-4-isothiazolin-3-one

and

(a2) 2-methyl-4-isothiazolin-3-one

and

(b) an ionene polymer

wherein the ratio by weight of the sum of components (a1) and (a2) to component (b) is from 1:99 to 99:1 and wherein the amounts of the components are synergistically effective to control fungal or bacterial growth in said fluid.

2. 2. A method as claimed in claim 1, wherein said ratio is from about 20:80 to about 80:20.

3. 3. A method as claimed in claim 2, wherein said ratio is from about 40:60 to about 60:40.

4. 4. A method as claimed in claim 3, wherein said ratio is about 50:50.

5. 5. A method as claimed in any preceding claim, wherein said ionene polymer is poly[oxyethylene(dimethyliminio)ethylene dichloride].

6. 6. A method as claimed in any one of claims 1 to 4, wherein said ionene polymer is the condensation product of about equimolar amounts of epichlorohydrin and dimethylamine.

7. 7. A method as claimed in any preceding claim wherein components (a1) and (a2) are added to said metalworking fluid in the form of a mixture one with another.

=>

L15 ANSWER 82 OF 142 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1993:228244 CAPLUS

DOCUMENT NUMBER: 118:228244

TITLE: Synergistic combinations of 2-(  
**thiocyanomethylthio**)**benzothiazole**  
with **hexahydro-1,3,**  
**5-tris(2-**  
**hydroxyethyl)-s-triazine**  
in controlling fungal and bacterial growth in aqueous  
fluids

INVENTOR(S): Oppong, David; Hollis, C. George

PATENT ASSIGNEE(S): Buckman Laboratories International, Inc., USA

SOURCE: PCT Int. Appl., 27 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

INT. PATENT CLASSIF.:

MAIN: A01N043-78

SECONDARY: A01N043-64; C10M141-08

CLASSIFICATION: 5-2 (Agrochemical Bioregulators)

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9304584	A1	19930318	WO 1992-US7272	19920902
W:	AT, AU, BB, BG, BR, CA, CH, CS, DE, DK, ES, FI, GB, HU, JP, KP, KR, LK, LU, MG, MN, MW, NL, NO, PL, RO, RU, SD, SE			
RW:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, SN, TD, TG			
US 5198440	A	19930330	US 1991-759000	19910905
ZA 9206533	A	19930503	ZA 1992-6533	19920828
AU 9225658	A1	19930405	AU 1992-25658	19920902
AU 657245	B2	19950302		
EP 604511	A1	19940706	EP 1992-919615	19920902
EP 604511	B1	19961127		
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, SE			
JP 06510541	T2	19941124	JP 1992-505293	19920902
BR 9206533	A	19950425	BR 1992-6533	19920902
AT 145514	E	19961215	AT 1992-919615	19920902
ES 2096102	T3	19970301	ES 1992-919615	19920902
CA 2117080	C	19990119	CA 1992-2117080	19920902
JP 3245164	B2	20020107	JP 1993-505293	19920902
FI 9401054	A	19940304	FI 1994-1054	19940304
NO 9400776	A	19940504	NO 1994-776	19940304
PRIORITY APPLN. INFO.:			US 1991-759000 A	19910905
			WO 1992-US7272 A	19920902

ABSTRACT:

Mixts. of **hexahydro-1,3,5-tris**  
**(2-hydroxyethyl)-s-triazine** (I) with  
2-( **thiocyanomethylthio**)**benzothiazole** (II) are synergistic  
microbicides in aq. fluids, such as metalworking fluids. I-II mixts.  
synergistically controlled *Fusarium*, *Staphylococcus aureus*, *Pseudomonas*  
*aeruginosa*, and other microorganisms in metalworking fluids.

SUPPL. TERM: microbicide synergism triazine benzothiazole deriv

INDEX TERM: Lubricating oils  
(metalworking, microbicide for, synergistic mixt. of  
benzothiazole and triazine deriv. as)

INDEX TERM: Bactericides, Disinfectants, and Antiseptics  
Fungicides and Fungistats  
(synergistic, benzothiazole and triazine deriv.-contg.  
compns., for metalworking fluids)

INDEX TERM:

147576-04-3

ROLE: BIOL (Biological study)

(as microbicide, synergistic, for ecosystems)

L46 ANSWER 12 OF 13 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 6  
 ACCESSION NUMBER: 1976:108327 CAPLUS  
 DOCUMENT NUMBER: 84:108327  
 TITLE: Additive with bactericidal action for oil-in-water emulsions  
 INVENTOR(S): Runge, Gerhard B.  
 PATENT ASSIGNEE(S): Exxon Research and Engineering Co., USA  
 SOURCE: Ger. Offen., 20 pp.  
 CODEN: GWXXBX  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 INT. PATENT CLASSIF.: C10M  
 CLASSIFICATION: 51-7 (Fossil Fuels, Derivatives, and Related Products)  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 2524543	A1	19751218	DE 1975-2524543	19750603
SE 7506518	A	19751208	SE 1975-6518	19750606
SE 422809	B	19820329		
SE 422809	C	19820708		
FR 2273862	A1	19760102	FR 1975-17828	19750606
FR 2273862	B1	19820924		

PRIORITY APPLN. INFO.: GB 1974-25341 19740607

ABSTRACT:

A bactericidal additive (270-600 ppm) for lubricating and hydraulic oils was composed of a mixt. of hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine [\*\*\*4719-04-4\*\*\*] with 1,2-benzisothiazolone [2634-33-5] and 2(3H)-pyridinethione N-oxide Na salt [3811-73-2], and o-benzyl-p-chlorophenol [120-32-1], chloro-2-phenylphenol [27478-26-8], or 2-phenylphenol [90-43-7].

SUPPL. TERM: lubricating oil bactericidal additive; hydraulic oil bactericidal additive; phenol bactericidal additive  
 lubricant; triazine bactericidal additive lubricant

INDEX TERM: Lubricating oil additives

(bactericidal, phenols and triazines as)

INDEX TERM: Bactericides, Disinfectants and Antiseptics

(phenol and triazine derivs. as, for lubricating oils)

INDEX TERM: 90-43-7 120-32-1 2634-33-5 3811-73-2

4719-04-4 27478-26-8

ROLE: USES (Uses)

(bactericidal additive, for lubricating oils)

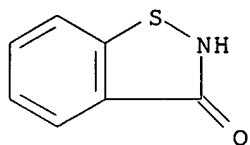
IT 2634-33-5 3811-73-2 4719-04-4

RL: USES (Uses)

(bactericidal additive, for lubricating oils)

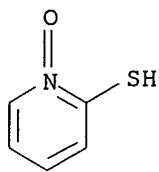
RN 2634-33-5 CAPLUS

CN 1,2-Benzisothiazol-3(2H)-one (9CI) (CA INDEX NAME)



RN 3811-73-2 CAPLUS

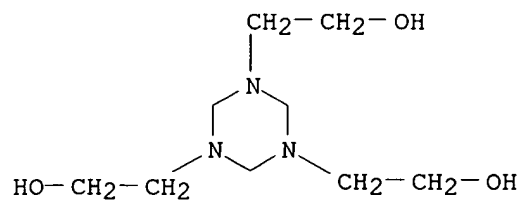
CN 2-Pyridinethiol, 1-oxide, sodium salt (8CI, 9CI) (CA INDEX NAME)



● Na

RN 4719-04-4 CAPLUS

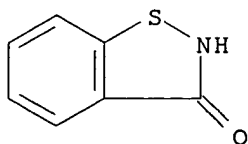
CN 1,3,5-Triazine-1,3,5(2H,4H,6H)-triethanol (9CI) (CA INDEX NAME)



=>



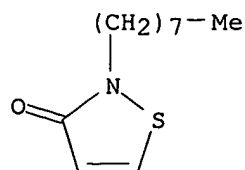
L25 ANSWER 13 OF 14 REGISTRY COPYRIGHT 2002 ACS  
 RN 2634-33-5 REGISTRY  
 CN 1,2-Benzisothiazol-3(2H)-one (9CI) (CA INDEX NAME)  
 OTHER CA INDEX NAMES:  
 CN 1,2-Benzisothiazolin-3-one (6CI, 7CI, 8CI)  
 OTHER NAMES:  
 CN 1,2-Benzisothiazol-3-one  
 CN **1,2-Benzisothiazolone**  
 CN 1,2-Benzoisothiazol-3-one  
 CN 3-Hydroxy-1,2-benzisothiazole  
 CN **Benzisothiazolone**  
 CN Bestcide 200K  
 CN Proxel AB  
 CN Proxel BD  
 CN Proxel BD 20  
 CN Proxel BDN  
 CN Proxel CF  
 CN Proxel GXL  
 CN Proxel PL  
 CN Proxel Press Paste  
 CN Proxel TN  
 CN Proxel XL 2  
 CN San-aibac AP  
 CN Topcide 600  
 CN XBINX  
 FS 3D CONCORD  
 DR 54392-14-2, 101964-01-6, 75037-67-1, 40991-37-5  
 MF C7 H5 N O S  
 CI COM  
 LC STN Files: ANABSTR, AQUIRE, BEILSTEIN\*, BIOBUSINESS, BIOSIS, BIOTECHNO,  
 CA, CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS,  
 CHEMINFORMRX, CHEMLIST, CIN, CSCHEM, CSNB, DDFU, DRUGU, EMBASE, IFICDB,  
 IFIPAT, IFIUDB, IPA, MEDLINE, MSDS-OHS, NIOSHTIC, PIRA, PROMT, RTECS\*,  
 SPECINFO, SYNTHLINE, TOXCENTER, USPAT2, USPATFULL  
 (\*File contains numerically searchable property data)  
 Other Sources: DSL\*\*, EINECS\*\*, TSCA\*\*  
 (\*\*Enter CHEMLIST File for up-to-date regulatory information)



\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

618 REFERENCES IN FILE CA (1962 TO DATE)  
 64 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
 620 REFERENCES IN FILE CAPLUS (1962 TO DATE)  
 16 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

L28 ANSWER 3 OF 3 REGISTRY COPYRIGHT 2002 ACS  
 RN 26530-20-1 REGISTRY  
 CN 3(2H)-Isothiazolone, 2-octyl- (9CI) (CA INDEX NAME)  
 OTHER CA INDEX NAMES:  
 CN 4-Isothiazolin-3-one, 2-octyl- (8CI)  
 OTHER NAMES:  
 CN 2-n-Octyl-3-isothiazolone  
 CN 2-n-Octyl-4-isothiazolin-3-one  
 CN 2-n-Octyl-4-isothiozolin-3-one  
 CN **2-n-Octylisothiazolin-3-one**  
 CN 2-Octyl-3-isothiazolinone  
 CN 2-Octyl-3-isothiazolone  
 CN 2-Octyl-4-isothiazolin-3-one  
 CN 2-Octyl-4-isothiazoline-3-one  
 CN 2-Octyl-4-isothiazolinone  
 CN A-DW  
 CN Kathon 4200  
 CN Kathon 893  
 CN Kathon 893F  
 CN Kathon 893T  
 CN Kathon LM  
 CN Kathon LP Preservative  
 CN Kathon SP 70  
 CN Micro-Chek 11  
 CN Micro-Chek 11D  
 CN Othililone  
 CN Pancil  
 CN Pancil T  
 CN RH 893  
 CN Skane 8  
 CN Skane M 8  
 CN Vinyzene IT 3000DIDP  
 FS 3D CONCORD  
 DR 12673-72-2, 122667-23-6, 53028-82-3  
 MF C11 H19 N O S  
 CI COM  
 LC STN Files: AGRICOLA, ANABSTR, AQUIRE, BEILSTEIN\*, BIOBUSINESS, BIOSIS,  
 BIOTECHNO, CA, CAPLUS, CASREACT, CHEMCATS, CHEMLIST, CIN, CSCHM, CSNB,  
 DDFU, DRUGU, EMBASE, IFICDB, IFIPAT, IFIUDB, MEDLINE, MRCK\*, MSDS-OHS,  
 NIOSHTIC, PIRA, PROMT, RTECS\*, SPECINFO, TOXCENTER, ULIDAT, USPAT2,  
 USPATFULL  
 (\*File contains numerically searchable property data)  
 Other Sources: DSL\*\*, EINECS\*\*, TSCA\*\*  
 (\*\*Enter CHEMLIST File for up-to-date regulatory information)



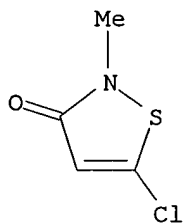
\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

402 REFERENCES IN FILE CA (1962 TO DATE)

37 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA

404 REFERENCES IN FILE CAPLUS (1962 TO DATE)

L30 ANSWER 8 OF 9 REGISTRY COPYRIGHT 2002 ACS  
 RN 26530-03-0 REGISTRY  
 CN **3(2H)-Isothiazolone, 5-chloro-2-methyl-, hydrochloride (9CI)**  
 (CA INDEX NAME)  
 OTHER CA INDEX NAMES:  
 CN **4-Isothiazolin-3-one, 5-chloro-2-methyl-, hydrochloride (8CI)**  
 OTHER NAMES:  
 CN **5-Chloro-2-methyl-3-isothiazolone hydrochloride**  
 CN **5-Chloro-2-methyl-4-isothiazolin-3-one hydrochloride**  
 DR 116680-96-7  
 MF C4 H4 Cl N O S . Cl H  
 LC STN Files: BEILSTEIN\*, CA, CAPLUS, CASREACT, CHEMLIST, IFICDB, IFIPAT,  
 IFIUDB, TOXCENTER, USPATFULL  
 (\*File contains numerically searchable property data)  
 Other Sources: DSL\*\*, EINECS\*\*, TSCA\*\*  
 (\*\*Enter CHEMLIST File for up-to-date regulatory information)  
 CRN (26172-55-4)

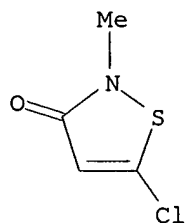


● HCl

24 REFERENCES IN FILE CA (1962 TO DATE)  
 24 REFERENCES IN FILE CAPLUS (1962 TO DATE)

L30 ANSWER 9 OF 9 REGISTRY COPYRIGHT 2002 ACS  
 RN 26172-55-4 REGISTRY  
 CN **3(2H)-Isothiazolone, 5-chloro-2-methyl- (9CI)** (CA INDEX NAME)  
 OTHER CA INDEX NAMES:  
 CN **4-Isothiazolin-3-one, 5-chloro-2-methyl- (8CI)**  
 OTHER NAMES:  
 CN **2-Methyl-5-chloro-3-isothiazolone**  
 CN **2-Methyl-5-chloroisothiazolin-3-one**  
 CN **5-Chloro-2-methyl-2H-isothiazol-3-one**  
 CN **5-Chloro-2-methyl-3(2H)-isothiazolone**  
 CN **5-Chloro-2-methyl-3-isothiazolone**  
 CN **5-Chloro-2-methyl-4-isothiazolin-3-one**  
 CN **5-Chloro-2-methylisothiazolin-3-one**  
 CN **5-Chloro-N-methylisothiazolin-3-one**  
 CN **5-Chloro-N-methylisothiazolone**  
 CN Kathon CG 5243

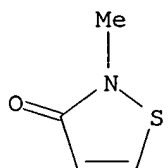
CN Methylchloroisothiazolinone  
 CN **N-Methyl-5-chloroisothiazolin-3-one**  
 CN **N-Methyl-5-chloroisothiazolone**  
 FS 3D CONCORD  
 DR 137662-59-0  
 MF C4 H4 Cl N O S  
 CI COM  
 LC STN Files: AGRICOLA, ANABSTR, AQUIRE, BEILSTEIN\*, BIOBUSINESS, BIOSIS,  
 BIOTECHNO, CA, CANCERLIT, CAPLUS, CASREACT, CEN, CHEMCATS, CHEMLIST,  
 CHEMSAFE, CIN, CSChem, CSNB, EMBASE, IFICDB, IFIPAT, IFIUDB, IPA,  
 MEDLINE, MSDS-OHS, NIOSHTIC, PIRA, PROMT, RTECS\*, SPECINFO, TOXCENTER,  
 ULIDAT, USPAT2, USPATFULL  
 (\*File contains numerically searchable property data)  
 Other Sources: DSL\*\*, EINECS\*\*, TSCA\*\*  
 (\*\*Enter CHEMLIST File for up-to-date regulatory information)



\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

701 REFERENCES IN FILE CA (1962 TO DATE)  
 81 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
 702 REFERENCES IN FILE CAPLUS (1962 TO DATE)

L16 ANSWER 10 OF 11 REGISTRY COPYRIGHT 2002 ACS  
 RN 26172-54-3 REGISTRY  
 CN 3(2H)-Isothiazolone, 2-methyl-, hydrochloride (9CI) (CA INDEX NAME)  
 OTHER CA INDEX NAMES:  
 CN 4-Isothiazolin-3-one, 2-methyl-, hydrochloride (8CI)  
 OTHER NAMES:  
 CN 2-Methyl-3-isothiazolone hydrochloride  
 CN **2-Methyl-4-isothiazolin-3-one hydrochloride**  
 DR 116680-95-6  
 MF C4 H5 N O S . Cl H  
 LC STN Files: BEILSTEIN\*, CA, CAPLUS, CASREACT, CHEMCATS, CHEMLIST, IFICDB,  
 IFIPAT, IFIUDB, TOXCENTER, USPATFULL  
 (\*File contains numerically searchable property data)  
 Other Sources: DSL\*\*, EINECS\*\*, TSCA\*\*  
 (\*\*Enter CHEMLIST File for up-to-date regulatory information)  
 CRN (2682-20-4)

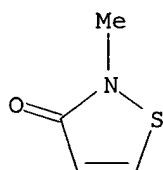


● HCl

28 REFERENCES IN FILE CA (1962 TO DATE)  
 28 REFERENCES IN FILE CAPLUS (1962 TO DATE)

L16 ANSWER 11 OF 11 REGISTRY COPYRIGHT 2002 ACS  
 RN 2682-20-4 REGISTRY  
 CN 3(2H)-Isothiazolone, 2-methyl- (9CI) (CA INDEX NAME)  
 OTHER CA INDEX NAMES:  
 CN 4-Isothiazolin-3-one, 2-methyl- (7CI, 8CI)  
 OTHER NAMES:  
 CN 2-Methyl-3(2H)-isothiazolone  
 CN 2-Methyl-3-isothiazolone  
 CN **2-Methyl-4-isothiazolin-3-one**  
 CN 2-Methyl-4-isothiazoline-3-one  
 CN Kathon CG 243  
 CN Kordek 50  
 CN Methylisothiazolinone  
 CN MIT  
 CN N-Methylisothiazolin-3-one  
 CN N-Methylisothiazolone  
 CN Neolone  
 CN Neolone M 50  
 CN ProClin 150  
 FS 3D CONCORD

DR 125794-71-0, 184720-17-0  
MF C4 H5 N O S  
CI COM  
LC STN Files: AGRICOLA, ANABSTR, AQUIRE, BEILSTEIN\*, BIOBUSINESS, BIOSIS,  
BIOTECHNO, CA, CANCERLIT, CAOLD, CAPLUS, CASREACT, CHEMCATS, CHEMLIST,  
CHEMSAFE, CIN, CSCHM, CSNB, DIOGENES, EMBASE, IFICDB, IFIPAT, IFIUDB,  
IPA, MEDLINE, MSDS-OHS, NIOSHTIC, PIRA, PROMT, RTECS\*, SPECINFO,  
TOXCENTER, ULIDAT, USPAT2, USPATFULL  
(\*File contains numerically searchable property data)  
Other Sources: DSL\*\*, EINECS\*\*, TSCA\*\*  
(\*\*Enter CHEMLIST File for up-to-date regulatory information)

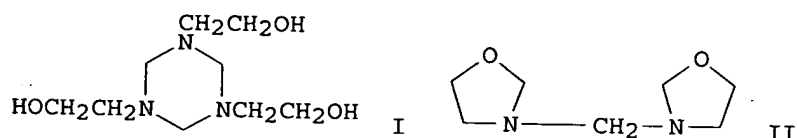


\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

555 REFERENCES IN FILE CA (1962 TO DATE)  
54 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
559 REFERENCES IN FILE CAPLUS (1962 TO DATE)  
2 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

=>

L6 ANSWER 210 OF 1400 CAPLUS COPYRIGHT 2003 ACS  
 ACCESSION NUMBER: 1979:22868 CAPLUS  
 DOCUMENT NUMBER: 90:22868  
 TITLE: Condensation of monoethanolamine with formaldehyde  
 AUTHOR(S): Gafarov, A. N.; Punegova, L. N.; Loginova, E. I.;  
 Novikov, S. S.; Titov, N. K.  
 CORPORATE SOURCE: Kazan. Fiz.-Tekh. Inst., Kazan, USSR  
 SOURCE: Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya  
 (1978), (9), 2189  
 CODEN: IASKA6; ISSN: 0002-3353  
 DOCUMENT TYPE: Journal  
 LANGUAGE: Russian  
 CLASSIFICATION: 28-6 (Heterocyclic Compounds (More Than One Hetero  
 Atom))  
 GRAPHIC IMAGE:



**ABSTRACT:**

The condensation of HOCH<sub>2</sub>CH<sub>2</sub>NH<sub>2</sub> with HCHO gives, in addn. to the expected s-triazine I, the bisoxazolidine II. The yield of II increases with increasing amt. HCHO and is quant. at HOCH<sub>2</sub>CH<sub>2</sub>NH<sub>2</sub>-HCHO = 1:1.5.

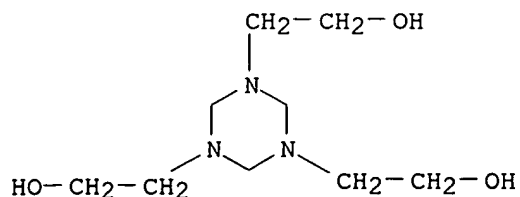
SUPPL. TERM: ethanolamine cyclocondensation formaldehyde;  
**oxazolidine methylenebis**  
 INDEX TERM: Cyclocondensation reaction  
 (of ethanolamine with formaldehyde, N,N'-  
 methylenebisoxazolidine formation in)  
 INDEX TERM: 50-00-0, reactions  
 ROLE: RCT (Reactant); RACT (Reactant or reagent)  
 (cyclocondensation of, with ethanolamine)  
 INDEX TERM: 141-43-5, reactions  
 ROLE: RCT (Reactant); RACT (Reactant or reagent)  
 (cyclocondensation of, with formaldehyde)  
 INDEX TERM: 66204-43-1P  
 ROLE: FORM (Formation, nonpreparative); PREP (Preparation)  
 (formation of, in condensation of ethanolamine with  
 formaldehyde)

=> d 210 iall

L6 ANSWER 210 OF 1400 CAPLUS COPYRIGHT 2003 ACS  
 ACCESSION NUMBER: 1979:22868 CAPLUS  
 DOCUMENT NUMBER: 90:22868  
 TITLE: Condensation of monoethanolamine with formaldehyde  
 AUTHOR(S): Gafarov, A. N.; Punegova, L. N.; Loginova, E. I.;  
 Novikov, S. S.; Titov, N. K.  
 CORPORATE SOURCE: Kazan. Fiz.-Tekh. Inst., Kazan, USSR  
 SOURCE: Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya  
 (1978), (9), 2189  
 CODEN: IASKA6; ISSN: 0002-3353  
 DOCUMENT TYPE: Journal  
 LANGUAGE: Russian



L14 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2002 ACS  
 RN 4719-04-4 REGISTRY  
 CN 1,3,5-Triazine-1,3,5(2H,4H,6H)-triethanol (9CI) (CA INDEX NAME)  
 OTHER CA INDEX NAMES:  
 CN s-Triazine-1,3,5(2H,4H,6H)-triethanol (8CI)  
 OTHER NAMES:  
 CN 1,3,5-Tris(2-hydroxyethyl)hexahydro-1,3,5-triazine  
 CN 1,3,5-Tris(2-hydroxyethyl)hexahydro-s-triazine  
 CN Actane  
 CN Acticide GR  
 CN Bactraclean  
 CN Busan 1060  
 CN Busan 1506  
 CN ETA 75  
 CN Grotan B  
 CN **Grotan BK**  
 CN Hexahydro-1,3,5-tri(2-hydroxyethyl)-s-triazine  
 CN Hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine  
 CN Kalpur TE  
 CN KM 200  
 CN KM 200 (alcohol)  
 CN N,N',N''-Tris(.beta.-hydroxyethyl)hexahydro-s-triazine  
 CN N,N',N''-Tris(2-hydroxyethyl)hexahydro-s-triazine  
 CN Onyxide 200  
 CN Roksol T 1-7  
 CN Surcide D  
 CN Surcide P  
 CN Triadine 3  
 FS 3D CONCORD  
 DR 63310-09-8  
 MF C9 H21 N3 O3  
 CI COM  
 LC STN Files: AQUIRE, BEILSTEIN\*, BIOBUSINESS, BIOSIS, CA, CAPLUS,  
 CASREACT, CHEMLIST, CIN, CSCHEM, CSNB, DETHERM\*, EMBASE, IFICDB,  
 IFIPAT,  
 IFIUDB, MEDLINE, MSDS-OHS, NIOSHTIC, PIRA, PROMT, RTECS\*, SPECINFO,  
 TOXCENTER, ULIDAT, USPAT2, USPATFULL  
 (\*File contains numerically searchable property data)  
 Other Sources: DSL\*\*, EINECS\*\*, TSCA\*\*  
 (\*\*Enter CHEMLIST File for up-to-date regulatory information)



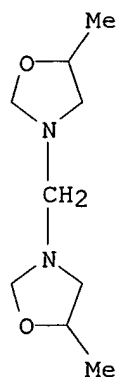
\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

248 REFERENCES IN FILE CA (1962 TO DATE)

20 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA

248 REFERENCES IN FILE CAPLUS (1962 TO DATE)

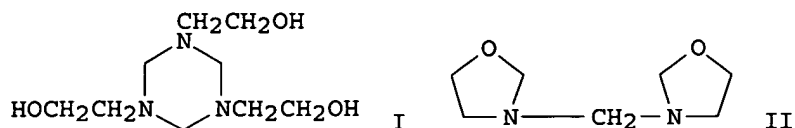
L20 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2002 ACS  
RN 66204-44-2 REGISTRY  
CN Oxazolidine, 3,3'-methylenebis[5-methyl- (9CI) (CA INDEX NAME)  
OTHER NAMES:  
CN Grotan OX  
CN **MAR 71**  
FS 3D CONCORD  
MF C9 H18 N2 O2  
LC STN Files: BEILSTEIN\*, BIOSIS, CA, CAPLUS, CHEMLIST, IFICDB, IFIPAT,  
IFIUDB, MEDLINE, TOXCENTER, USPAT2, USPATFULL  
(\*File contains numerically searchable property data)  
Other Sources: EINECS\*\*  
(\*\*Enter CHEMLIST File for up-to-date regulatory information)



\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

15 REFERENCES IN FILE CA (1962 TO DATE)  
15 REFERENCES IN FILE CAPLUS (1962 TO DATE)

CLASSIFICATION: 28-6 (Heterocyclic Compounds (More Than One Hetero Atom))  
GRAPHIC IMAGE:



ABSTRACT:

The condensation of HOCH<sub>2</sub>CH<sub>2</sub>NH<sub>2</sub> with HCHO gives, in addn. to the expected s-triazine I, the bisoxazolidine II. The yield of II increases with increasing amt. HCHO and is quant. at HOCH<sub>2</sub>CH<sub>2</sub>NH<sub>2</sub>-HCHO = 1:1.5.

SUPPL. TERM: ethanolamine cyclocondensation formaldehyde;  
**oxazolidine methylenebis**  
INDEX TERM: Cyclocondensation reaction  
(of ethanolamine with formaldehyde, N,N'-  
methylenebisoxazolidine formation in)  
INDEX TERM: 50-00-0, reactions  
ROLE: RCT (Reactant); RACT (Reactant or reagent)  
(cyclocondensation of, with ethanolamine)  
INDEX TERM: 141-43-5, reactions  
ROLE: RCT (Reactant); RACT (Reactant or reagent)  
(cyclocondensation of, with formaldehyde)  
INDEX TERM: 66204-43-1P  
ROLE: FORM (Formation, nonpreparative); PREP (Preparation)  
(formation of, in condensation of ethanolamine with  
formaldehyde)

=>

d his ful

(FILE 'HOME' ENTERED AT 10:14:15 ON 14 JUN 2003)

FILE 'REGISTRY' ENTERED AT 10:14:21 ON 14 JUN 2003

L1 1 SEA 66204-44-2  
D

FILE 'EMBASE, BIOSIS, EUROPATFULL, JAPIO, ADISCTI, ADISINSIGHT, ADISNEWS, BABS, BIOBUSINESS, BIOCOMMERCE, BIOTECHNO, CANCERLIT, CAPLUS, CBNB, CEN, CIN, CONFSCI, DGENE, DIOGENES, DRUGB, DRUGLAUNCH, DRUGMONOG2, DRUGNL, DRUGU, DRUGUPDATES, EMBAL, ESBIODASE, ...' ENTERED AT 10:14:59 ON 14 JUN 2003

L2 266 SEA (METHYLENEBIS OR METHYLENE BIS) (3A) (OXAZOL? OR METHYLOXAZOL? OR METHANEOXAZOL?) OR L1

FILE 'REGISTRY' ENTERED AT 10:18:57 ON 14 JUN 2003

L3 SET SMARTSELECT ON  
SEL L1 1- CHEM : 3 TERMS  
SET SMARTSELECT OFF

FILE 'EMBASE, BIOSIS, EUROPATFULL, JAPIO, ADISCTI, ADISINSIGHT, ADISNEWS, BABS, BIOBUSINESS, BIOCOMMERCE, BIOTECHNO, CANCERLIT, CAPLUS, CBNB, CEN, CIN, CONFSCI, DGENE, DIOGENES, DRUGB, DRUGLAUNCH, DRUGMONOG2, DRUGNL, DRUGU, DRUGUPDATES, EMBAL, ESBIODASE, ...' ENTERED AT 10:18:58 ON 14 JUN 2003

L4 1248 SEA L3/BI  
L5 1473 SEA L2 OR L4  
L6 1400 DUP REM L5 (73 DUPLICATES REMOVED)  
D 1-  
D 210 IALL  
D 210 IALL  
D 1-210  
D 209 IALL  
D 206 IALL  
D 197 IALL  
D 194 IALL  
D 187 IALL  
D 124 KWIC\  
D 93 IALL